

ABSTRACT OF THE DISCLOSURE

A phase modulation method and apparatus use a plurality of phase modulators disposed in series to phase-modulate light from a source laser. Modulation by the phase modulators is used to produce phase shifts in the optical signal, with modulation by the first phase modulator producing phase shifts of 0 degrees or 2ϕ degrees, and modulation by the n-th phase modulator producing phase shifts of 0 degrees or $2^n \times \phi$ degrees. Here, ϕ degrees is a predetermined phase level and n is an integer that is not less than two and not more than the number of phase modulators. The method is also used to detect and control transmission errors.